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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • SEPTEMBER 11, 1943

TECHNOLOGY DEPT.

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DETROIT

Mightiest Weapon

See Page 166

A SCIENCE SERVICE PUBLICATION

Do You Know?

Opium grown in Yugoslavia and Turkey has particularly high *morphine* content.

Armed forces have ordered 24,000,000 burrs (dental drills) to care for cavities in the teeth of military personnel; 17,000,000 are left for civilians.

The American *lamb* crop for 1943 is approximately 31,000,000 head, a decrease of 1,500,000 from 1942 due to fewer breeding ewes and a smaller percentage of survival of lambs dropped.

Despite war difficulties, Alaska's Bristol bay, the greatest red salmon producing section of the world, by July 10 of this year produced 5.5 times as much *canned salmon* as for the same period last year.

Over 2,000,000,000 *cartridges* for machine guns and rifles have been made in 2½ years by a single St. Louis ordnance plant; if placed end to end along the equator they would encircle the earth nine times.

Sulfite liquor, a discarded byproduct of woodpulp mills, may be salvaged and made into alcohol; chemists state enough is now wasted from mills in Canada and the United States to make annually 86,000,000 gallons of alcohol.

Women have replaced men as government *fish counters* at the Bonneville Dam in Oregon; they check off on mechanical counters the number of fish of each species using the fish ladders in going up the river to spawn.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

There are no wild land *beasts* in the Solomon Islands.

Ragweed, whose pollen is active in causing hayfever, is not found in Alaska, the British Isles, Scandinavia, Holland and most of Germany; it is not plentiful in Spain, Italy and France.

Fifty-three carloads of *paper* went into Ration Book No. 3.

Ecuador is experimenting with a variety of the *Sansevieria* plant as a new source of fiber for rope-making; the product is a type of African bowstring hemp.

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AERONAUTICS

Super-Bombers Coming

Flying battleships predicted by Gen. Arnold will, he says, make cross-Atlantic round trip without refueling but carrying full load of bombs.

➤ PRESIDENT ROOSEVELT'S warning to the peoples of the battered Axis powers that there's even worse to come if they don't surrender now receives specific backing from his Army Air Forces chief, Gen. H. H. Arnold, who tells of giant planes carrying half-carload lots of more-than-blockbuster bombs, in *Army Ordnance*.

These flying battleships, which Gen. Arnold says will be able to deliver their massive loads of devastation clear across the Atlantic and fly home again without refueling, will be armed for defense with cannon of a caliber larger even than the 37-millimeter that some American fighters now carry. These guns will operate on an entirely new principle, details of which are of course not yet disclosable. They will be mounted in multiple turrets operated from a central aiming position, analogous to the fire-control system of present-day battleships. The new gunsight will be as revolutionary as the present bombsight.

The plane will have "eyes" that will help guide it to its target or warn and plot the course of enemy interceptor planes.

The present bombers, which the promised new super-bomber will render obsolete, are given a liberal meed of praise by Gen. Arnold. Their defensive armament of .50-caliber machine guns, with which Flying Fortresses and Liberators fairly bristle, is the most formidable carried by any bombers in the world. It was a real stroke of foresight on the part of our ordnance designers, the air chief declares, that provided us with this highly effective weapon, which fires two-ounce slugs at a rate of 800 a minute and outranges enemy 20-millimeter cannon, in advance of our actual need for it.

Effectiveness of our demolition bombs was greatly increased by improvements in methods of manufacturing their casings, which hold them together while they penetrate deep into overhead earth or concrete protection, so that their heavy explosive charges detonate with earthquake-like results.

Fragmentation bombs, such as have lately destroyed many enemy airplanes on the ground, are made on a simple but highly effective pattern. Square rod iron is bent into a spiral coil, like the springs on a car wheel. Within this is a core of TNT. When this explodes, the coil is broken into 1,000 to 1,500 short chunks, which are hurled in all directions at twice the speed of a rifle bullet. At 200 feet these deadly fragments will cut through airplane wings, gas tanks, tires, radiators and control mechanisms. No human being standing anywhere near has a chance against this deadly iron hail. The Japs are said especially to dread American fragmentation bombs.

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MILITARY SCIENCE—PSYCHOLOGY

Infantry's Comeback Seen As Psychological Victory

➤ INFANTRY is still final boss of the battlefield. Pre-war anticipation that everything would be mechanized, and that the man on foot would have no chance against airplanes and tanks, have not been realized. This is the thesis of a lead editorial in the *Infantry Journal* (September).

Infantry's comeback, the *Journal* indicates, has involved a psychological as well as a military victory, for the claimants of all-annihilating power for the newer weapons had created lurking doubts in the minds of all but experienced soldiers concerning the value of the foot soldier under present-day combat conditions:

"To repeat and repeat that infantry was a dead arm might not affect the spirit of the soldier with experience, but it was almost bound to impede the building of the esprit that makes a fighting unit and the morale that sustains a fighting soldier as he goes into battle."

In the editor's opinion, the extravagant claims advanced, especially by proponents of air power, "could all have been made without attacking the older means. They could have been spread just as widely without insisting that only the new in war counted for victory and that all that was old was useless."

His own experience in battle, on fronts all the way from the Solomons to Sicily, have convinced the infantryman of the fallaciousness of these facile arguments and of his own tough, surviving value. The *Journal* continues:

"The infantryman who had any doubts soon learned that he was no second-rater. He learned that modern warfare calls for the utmost effort in every sphere where man can fight, and that if an army is weak in any one sphere and the opposing army is not, no possible amount of strength in the other spheres can make up for that weakness. (*Please turn page*)

WING SPREAD—As a graphic demonstration of the size of the great Curtiss Commando (C-46) cargo plane, 100 soldiers posed on the 108-foot wing span. The C-46 is powered with two 2,000 horsepower engines and weighs about 50,000 pounds fully loaded.

"The feeling of pride in essential accomplishment now inspires large numbers of American infantry units that have fought in Africa, Europe, and the Pacific. It is a battle pride that touches every infantryman still on the way to his first experience of combat. The pride in fighting skill of every infantryman who has now seen fighting and knows the vital importance of his own war job can be shared by every combat soldier who is still at work perfecting his skill."

Science News Letter, September 11, 1943

PUBLIC HEALTH

Health at 50c Weekly

Good medical and health care for all is possible and practical, de Kruif reports after study of the Kaiser set-up.

➢ THE BEST scientific medical care, complete in every detail, for every man, woman and child in America at a weekly cost to them of 50 cents each is possible and practical for the immediate future, Paul de Kruif reports on the basis of a study of Henry J. Kaiser's medical plan.

The report appears in the form of a book, *Kaiser Wakes the Doctors,* (Harcourt, Brace).

Dr. de Kruif (he is a Ph.D., not an M.D.) admits taking pains not to let his natural enthusiasm for the subject run away with his scientific judgment. This is apparent in the unusually restrained style. Not until near the end of the book does the typical de Kruif emotional appeal reach its full pitch. At that point most readers, probably including many physicians, will be in tune with the author.

The book tells first about how Mr. Kaiser and his able medical director, Dr. Sidney Garfield, put into effect a program of complete and expert medical care for Kaiser workers on a financial basis so sound that the cost of building and equipping hospitals and other facilities as well as running them is covered.

It tells how these two practical dreamers conquered the opposition of medical societies in California and Washington by: 1. showing that the medical care given the Kaiser workers was up to the best standards of medicine available anywhere; 2. showing that the individual physician practicing by himself, no matter how hard he tried, could not possibly give such care at a price the common man could pay; 3. showing that such health centers as Kaiser's workers had, replicas of the Mayo Clinic for the common man, would be free from bureaucratic control by any government agency; 4. showing that, as the center developed, funds would accumulate, in the nature of real profits, which could be used for supporting research in the field of medicine.

The financial end, a headache to most doctors, is managed, when the plan is applied to industrial workers, by industry with the workers having a voice in the management, but, as Dr. de Kruif quotes Mr. Kaiser:

"You, the doctors, have got to personnel it. You're the only ones who know how to staff it. You've got to set up the scientific standards, hold every doctor to them. You'll have complete control of your personnel."

So far, the Kaiser plan for super-medical service within the pocket-book range of the common man applies only to Kaiser workers and, through the California Physicians' Service, to their families.

Extending it to other large industrial groups would not be difficult since the management and financial backing would be readily available. Extending it even to workers in small industries, white collar workers in small towns, farmers in remote rural areas, in fact to the common man everywhere, is not impossible, according to the de Kruif-Kaiser-Garfield thinking. Such groups, they believe, could band together to create health centers for themselves, getting financial support until they are self-supporting from bankers. For the encouragement of the bankers, a government Medical Loan Agency, like a medical RFC, to guarantee 50% of any losses, is suggested.

These Mayo Clinics for the common man, as Dr. de Kruif terms them, would be for persons of small or moderate incomes. They would not keep doctors from treating wealthy patients as they do now. Dr. de Kruif believes, however, that very many specially trained doctors, particularly the younger ones and those who will return to civilian life after the war, would be delighted to have an opportunity to practice high grade scientific medicine without worrying over finances—their own or their patients'.

Science News Letter, September 11, 1943

MEDICINE

Treatment Recommended For "Dural Poisoning"

➢ IF YOU WORK in an airplane plant or some other industry in which aluminum alloys were used, you may have heard about the condition popularly called "dural poisoning." This takes three forms: 1. The worker gets a splinter of the metal in his skin after which inflammation sets in and an abscess may form; 2. A driller gets a puncture wound which closes easily, but leaves an aftermath of painful, tender inflammation and swelling under the surface; 3. A relatively few workers, about four to six per 1,000, get eczema, itching or other skin disease from contact with the light metal dust. A test pilot who took up a new airplane, it is reported, had a sliver of light metal penetrate his lip causing a severe inflammation.

The magnesium in the alloy is specifically responsible for the characteristic disturbances, Dr. Ludwig Teleky, of the Industrial Hygiene Division, New York State Department of Labor, declares. When the magnesium gets into the body tissues it decomposes the water, as potassium and sodium do. As a result, cavities form in the tissues and bubbles of hydrogen gas develop in the cavities. The magnesium hydroxide which is produced as part of this chemical reaction is apparently absorbed by the tissues.

Splinters of light metal alloys, Dr. Teleky also points out, have many small barbed hooks which can be seen under the microscope. These stick in the wound, and attach themselves to the skin and clothing. Splinters of iron, steel, copper and other heavy metals and of pure aluminum are much smoother and these metals almost never cause inflammatory reactions.

Many injuries from light metal splinters heal in a short time with no ensuing disability. In some cases, however, the splinter may disable the worker for from 10 to 14 days or longer. Workers with duraluminum or other light metal alloys should seek prompt medical attention for any injury or scratch of the skin to avoid the more serious results of such injury. Although the doctor will decide what is the best treatment in each case, Dr. Teleky suggests the following: 1. Removal of all splinters that can be seen; 2. Use of hydrogen peroxide, since as

this bubbles up in the wound it tends to bring to the surface and help remove splinters too small to be seen; 3. Disinfection of the wound and application of the usual sterile dressing.

To prevent the condition, dust in the workrooms must be kept from spreading by every possible means. Workers should wear protective uniforms. Their skin should be thoroughly cleaned at the end of each day to remove all dust and splinters on the skin. All dust should be periodically cleaned off tools and finished work, preferably by suction.

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BIOCHEMISTRY

Virus Probably Protein

Fresh evidence obtained with whirling supercentrifuge that particles of tobacco mosaic virus are really very large molecules.

▶ FRESH EVIDENCE that virus disease particles are giant protein molecules endowed with the life-like properties of reproduction and parasitic feeding has been obtained by Dr. Max A. Lauffer of the Rockefeller Institute for Medical Research at Princeton, N. J., it was revealed at the meeting of the American Chemical Society in Pittsburgh.

This new advance in science's war against disease was made through the use of a powerful weapon known as the ultracentrifuge, which whirls tubes of solutions at speeds far exceeding those of rifle bullets and cannon shells, separating substances or particles of different densities and sorting them in layers, as a cream separator separates cream from skim milk.

Identification of virus particles as giant molecules was made tentatively eight years ago by Dr. Wendell M. Stanley, also of the Rockefeller Institute, who first obtained a disease-bearing protein from sick tobacco plants in pure crystalline form. At that time it was learned that these suspected molecules are enormous, with molecular weights in the hundred-thousands, as contrasted with the mere tens or hundreds that represent the weights of ordinary molecules likes those of sugar or gasoline.

Dr. Lauffer's feat in more definitely pinning the guilt for disease-causing onto the big, bad molecules was accomplished by means of a special container employed in the ultracentrifuge, in which an adjustable perforated barrier permits any desired fraction of the contents to be removed without disturbing the rest.

A solution of the disease virus was whirled in this container until just one-fourth of it remained above the barrier. When this was removed and samples of it inoculated into healthy plants, it was found to have one-fourth the disease-causing ability of the whole solution. This constituted strong statistical evidence for the identity of protein and virus.

The virus on which the Rockefeller Institute researches have been conducted is that of tobacco mosaic, one of the worst loss-causers in tobacco fields. However, that in itself is of less importance than the possibility of transferring the conclusions to apply also to other disease viruses, which include the microscopically invisible causes of such serious human ills as infantile paralysis, yellow fever, smallpox and influenza.

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MEDICINE

Blood Donations by War Workers Get Okay

▶ WAR WORKERS form an impressively large group among patriotic Americans who are giving blood to the armed forces through the American Red Cross. They are doing this regularly, without danger to themselves, and without any slow-down in their work production, it appears from a report from the Industrial Hygiene Foundation.

One industrial company, before encouraging its workers to give blood to the Red Cross, recently asked the Foundation whether giving a pint of blood would make the donor weaker or more susceptible to colds or other diseases and whether it would cause absenteeism or slow production.

The Foundation referred the questions to members of its medical committee and to Dr. G. Canby Robinson, national director of the Red Cross Blood Donor Service, and to the technical director, Dr. Earl S. Taylor. The answers were unanimous that war workers could safely give blood. Typical is this answer:

"We have one of the largest Red Cross donor stations here in Milwaukee. All of our large war plants are encouraging their employees to contribute their blood at two to three-month intervals. They have found no decrease in the efficiency of their employees, no increase in colds or other infections, and no increased fa-

SAFETY AND BEAUTY—An attractive headdress with flaming bombs has been designed by the Army Ordnance for women working in the arsenals. At work, to protect the hair, they must wear it in the manner used by the girl on the left. After hours, the girls prefer to wear it as shown on the right.

tigue as a result of the blood-letting. In fact, the psychological effect is a new stimulus to greater effort and improvement in morale, like a 'shot in the arm.'"

Dr. Taylor reported that in one large city where 10,000 consecutive donors were given follow-up cards, less than one in 100 of the more than three-fourths who replied had colds or sore throats in the week following the blood donation. This was less than the rate for colds among the general population of the community at the time.

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WILDLIFE

Lifesaver Made For Fish In Irrigation Ditches

➤ SERIOUS FISH losses are one of the great worries of irrigation system management; the fish wander from the stream into irrigation ditches, until they are at last stranded in the fields to die. Various kinds of screens are placed in flumes to stop them, but these get clogged with floating debris, interfering with the flow of the water.

Richard Roberts of Cokeville, Wyo., who has died since his application was filed, invented a cylindrical screen, kept rotating by a horizontal paddlewheel placed partly athwart the flume. Ribs at intervals on the cylinder bear projecting fingers, which pick up the debris and throw it out of the way. The water is thus free to flow, but the fish still cannot get through the screen barrier. Patent 2,328,297, issued on this invention, is in charge of Floyd L. Roberts of Cokeville, Wyo., administrator.

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DUCK STAMP—A "must" item for duck hunters and preferred by stamp collectors is this Federal migratory-bird hunting stamp, 1943-44 issue. The color is Indian red and it is reproduced from an etching by Walter E. Bohl, of Columbus, Wisc.

MEDICINE

New War Hazard

Added to all the other dangers and discomforts of war in the China-Burma-India theater is a new itching rash caused by laundry mark.

➤ADDED to the hazards of war in the China-Burma-India theater is a distressing and in some cases temporarily incapacitating skin disease called dhobie mark dermatitis.

This new disease is an itching rash that breaks out on the neck, at the waistline and on the back or sides of the feet, ankles or lower part of the legs. It comes from contact with the marking fluid which native dhobies or washermen use for marking laundry, Maj. Clarence S. Livingood, Lieut. Arthur M. Rogers and Lieut. Col. Thomas Fitz-Hugh, Jr., of the 20th General Hospital, report. (*Journal, American Medical Association*, Sept. 4)

More than one-tenth of the men and one-fifth of the officers exposed to the marking fluid suffered with the skin trouble. Its importance "as a cause of disability in American officers and men in this theater," the medical officers comment, "is obvious."

Dhobie laundered clothes have previously been blamed for spread of a fungus infection of the skin popularly and medically termed "dhobie itch." This name is misleading, the medical officers state, and should be abandoned. The dhobie mark skin trouble is not a fungus infection, they found. Dhobie laundering, they indicate, may be hard on the clothes, buttons being broken "with disturbing regularity," but the process is not likely to spread fungus infection.

Dhobies mark laundry by pushing a straight pin through the hard capsule of the nut of the ral or bella gutti tree. The pin picks up enough dark brown or black fluid from the nut to make small crosses, dots or lines for identifying laundry. The marks are usually put on the inside of collar bands, inside the waistbands of shorts or trousers, and near the top or above the heel of socks. The regions affected by the skin trouble correspond to these locations.

The itching subsides and sores begin to heal as soon as dhobie-marked clothing is discarded. For persons sensitive to the dhobie mark, the officers advise: repeated washing of marked clothes; cutting out marked parts with scissors; furnishing dhobies with commercial indelible ink for marking; covering the marks with adhesive tape or similar material; or personal dhobies or self service without marking, this last being unsatisfactory but the safest for highly susceptible persons.

The natives, incidentally, have a common superstition that the ral or bella gutti tree has strong "likes" and "dislikes" for certain persons, "poisoning" its enemies when they approach the tree. The "poisoning" takes the form of severe itching skin trouble and the medical officers believe it may come from touching the leaves of the tree.

Lacking library facilities, the officers were unable to identify the tree except by the names of ral or bella gutti supplied by a line officer of the Indian army.

Their report recalls a U. S. Public Health Service finding, (*See SNL*, March 20) and now reported in detail to physicians in the *Journal of the American Medical Association*. This finding concerned an outbreak of skin trouble among employees of a government department in Washington who opened a sealed mail pouch containing among other things a bottle of thick black oil which had become partially opened and some spilled. The trouble, the federal health service found, was due to the oil which was labeled Bhilawanol Oil. It comes from the juice of the marking nut tree (*Semecarpus anacardium*), which grows in the tropical outer Himalayas and the hotter parts of India.

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ENGINEERING

Sixty Great Dams Designed By John Lucian Savage

See Front Cover

➤ GRAND COULEE dam, shown on the front cover of this week's SCIENCE NEWS LETTER, is just one of 60 major dams in the United States for which credit must be given to one designer, John Lucian Savage, who has been a public servant for 26 years.

Of these 60 dams, Grand Coulee and Boulder are considered the two mightiest weapons of this or any other war.

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MEDICINE

Prevention of Jaundice

If "pilot experiment" of National Institute of Health is confirmed, passing serum in thin stream through artificial sunlight may prevent bad effects.

➤ A "PILOT EXPERIMENT" suggesting that artificial sunlight may be the weapon for fighting the danger of jaundice in persons who get human blood serum for transfusions or protective inoculations is reported by three U. S. Public Health Service scientists at the National Institute of Health.

The scientists are Dr. John W. Oliphant, Dr. Alexander G. Gilliam and Dr. Carl L. Larson.

The problem caused national concern last year when more than 28,000 soldiers developed jaundice following inoculations against yellow fever. The Army solved its problem by switching to another type of anti-yellow fever vaccine which does not contain human blood serum. So far as known this new vaccine has not produced jaundice.

Jaundice, perhaps of the same type, was the major disease with which the Nazis had to deal on the Eastern front last year, German medical reports only now reaching this country reveal.

Even though our fighting men are not now in danger of jaundice from vaccinations protecting them against yellow fever, cases of the same ailment have been reported among civilians who were given convalescent serum for measles and mumps and following blood transfusions.

If the findings of the Public Health Service pilot experiment are confirmed by further tests, the danger of jaundice following transfusions might be averted by passing the blood or serum for the big transfusion banks in a thin stream through artificial sunlight. For smaller quantites of human serum, used to prepare vaccines against disease, advantage might be taken of the fact that about two and one-half months after a person has had this jaundice, the disease-producing agent disappears from his blood.

The cause of the disease is believed to be a virus but so far scientists have been unable to identify it, or to give the disease to laboratory animals. For the Public Health Service studies, 189 persons volunteered to get the disease so that their blood could be used to learn more about it. Most of them had only mild attacks and all recovered.

This serum jaundice is apparently not caught by contact with patients, although acute infectious jaundice is. Some scientists believe the two are different diseases with different, unknown germ or virus causes. Others think they are the same and that the differences are due to the difference in getting the disease through serum inoculation or through contact with infected droplets on the patient's breath.

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RADIO

Less Radio Noise

Proper engineering methods urged to prevent the need for later trouble-shooting and fix-it methods to get rid of interference in all-metal aircraft.

➤ NEWER CONCEPTS of chasing noise from radio installations in all-metal aircraft must be adopted in an eleventh-hour effort to replace obsolete practices, Fred Foulon of the Douglas Aircraft Company, El Segundo, Calif., told the American Institute of Electrical Engineers meeting in Salt Lake City.

"Increased use of special radio equipment," he said, "requires that this problem be approached from an engineering standpoint in order that the most economical use may be made of available radio noise elimination methods."

Message-blurring crackles that affect the safety of airmen are either due to weather or the airplane's electrical equipment. The latter results from electrical give and take between the airplane's radio receiver, the wiring and antenna.

"These components are produced by three different groups of manufacturers who have until recently made no effort to coordinate with each other on the radio noise problem," said Mr. Foulon, pointing out that solution of the noise problem depends on each party's accepting his part of the total responsibility.

Use of the trouble-shooting and fix-it method for correcting radio noise problems at the Douglas Aircraft Company from 1938 to 1940, engineers were told, "led to the realization that the problem should be handled by using proper engineering methods in the first place so that conditions leading to the coupling of radio influence sources to radio equipment could be avoided. Extensive bonding and shielding could then be reduced to the amount actually required to insure a noise-free installation."

Full use of the methods proposed requires teaching the subject to the electrical and radio design engineers, Mr. Foulon urged, perhaps accomplished by preparation of a manual of general material to make the designer aware of the problems involved, and supplemented by material applying to each separate airplane model.

One of the newer concepts of electrical design cited by Mr. Foulon is the discovery that practically all conduits, except that which shields the ignition system and some radio wiring, may be eliminated. This is resulting in economy of labor and material, reduction of vulnerability to gunfire, easier repairs both in flight and on the field, and a saving of weight.

Such developments require that the system of rigid detail specification be abandoned, Mr. Foulon maintained, and the emphasis put upon performance requirements of the completed plane.

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INVENTION

Roman Gets Patent On a Harmless Bomb

➤ RECENT war events have introduced a wry note of irony into one of the recent U. S. patents. It is on an invention by a Roman citizen with a German name, Erwin Puchner. The subject of the patent, No. 2,328,491, is a bomb. However, although it is filled with powder, it is neither an explosive nor an incendiary bomb. The powder is of the kind that smothers fires; it is a fire extinguisher.

Rights in the patent have been vested in the Alien Property Custodian.

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MILITARY SCIENCE

Gadget Turns Any Fencepost Into Machine Gun Mount

➤ TWO ARMY NONCOMS, Cpl. D. L. Hoover and Cpl. V. Ciaccarini, have invented a gadget that converts any fencepost or tree stump into an anti-aircraft mount for the .50-caliber machine gun, the weapon most feared by low-flying strafing planes. It can be secured in less than half a minute, onto any piece of timber between three inches and two feet in diameter. The device is described in detail by Capt. Byron R. Rampton, F.A., in the *Field Artillery Journal* (September).

Basis of the mount is a one-foot piece of four-inch angle iron, with two short pieces of chain attached near either end in such a way that they can be snugged up tight by turning a pair of wing nuts. These clamp the device to the post.

Across one end of the angle iron a circular plate is welded, with a groove that receives a flange projecting from a second, freely rotating plate; the two are pivoted on a bolt that passes through their centers. On top of the second plate a pair of forked arms are welded, and these serve as supports for the gun.

The entire mount is only 18 inches long and weighs about 25 pounds, so that it offers no difficulties in transportation.

Science News Letter, September 11, 1943

ASTRONOMY

Comet Reported by Finn May Actually be Asteroid

➤ THE COMET reported earlier this year by Miss L. Oterma, Finnish woman astronomer of Turku Observatory, may actually be an asteroid, according to a report received at the Harvard Observatory, American clearing house for astronomical reports.

A preliminary investigation of the elements of the comet, made by George H. Herbig and Miss Delia McMullin of the Department of Astronomy at the University of California at Los Angeles, showed that the eccentricity appears to group this object with the asteroids rather than the comets.

The stellar object in this case may be one of the multitude of minor planets revolving between the orbits of Mars and Jupiter and shining entirely by reflected light, instead of belonging to the highly eccentric comets which shine partly by reflected light and partly by light of their own.

"Attention should be called to the resemblance between Comet 1943a and Minor Planet 334 (Chicago)," points out Dr. Herrick, acting chairman of the Department of Astronomy of U.C.L.A. "If the two objects are identical," he adds, "the eccentricity of the minor planet has again passed through O, as it did before the conjunction of 1894."

The Oterma Comet was first seen on April 8 in the constellation of Virgo. It is not bright enough to be seen without the aid of a telescope, the magnitude remaining about 16.3. Miss Oterma is credited with discovering two comets last year.

These elements are essentially the same as those obtained first by L. E. Cunningham, and R. N. Thomas, and reported to Harvard Observatory.

Science News Letter, September 11, 1943

RESOURCES

Divi-Divi Tree Furnishes Leather Tanning Material

➤ DIVI-DIVI does not have a tannin sound but the divi-divi tree of tropical America grows a divi-divi pod from which divi-divi tannin is extracted to produce a particular finish in American leathers. Larger amounts are now imported into the United States than in pre-war days because of shortages of other tannins which formerly came from war-infested countries.

The divi-divi tree is found in the islands in the Caribbean and in Colombia, Venezuela, Brazil, Mexico and other Latin American tropical countries. Botanically it is known as *Caesalpinia coriaria*. Extracts from its pods are used for dyeing as well as for tanning. The name divi-divi appears to be of native origin.

The dark brown pods of the divi-divi are from 1½ to 2½ inches long, and when chemically analyzed are found to contain up to 50% tannin. The tannin is extracted by dissolving it out with hot water after the pods have been disintegrated. When leather is tanned with divi-divi alone it takes on a yellowish color.

Most commercial divi-divi tannin is obtained from wild trees. A few cultivated orchards exist, however, and the pods from these are reported to contain a higher percentage of tannin than the wild pods. An orchard tree at eight years of age will produce from 150 to 300 pounds of pods if cultivated under favorable conditions of soil, moisture and climate. It thrives in hot lowlands with a minimum amount of rainfall.

Science News Letter, September 11, 1943

IN SCIEN

ENGINEERING

Gas-Operated Unit Will Heat, Cool Post-War Homes

➤ NEW gas-operated air conditioning units that will combine winter heating, summer cooling and humidity adjustment for post-war homes and small business places have been developed by Servel, Inc.

Developed after nine years' research, 300 pre-Pearl Harbor test installations are now under observation in all kinds of climates.

For heating, the unit generates steam at ordinary boiling-point (212 degrees Fahrenheit). This flows to a blast type heating coil. A fan draws air over the coil and the steam condenses as the air is heated for circulation through the home.

For air cooling during the summer months, an absorption refrigeration cycle is used, containing lithium bromide solution as the solvent and water as the refrigerant.

In an enclosed high vacuum apparatus, the lithium bromide solution absorbs water vapor in the lowest pressure region of the system, creating a still lower pressure. This causes more water to vaporize resulting in a cooling effect.

To complete the cycle, steam from the exterior generator provides heat to separate the absorbed water from the lithium bromide solution.

Science News Letter, September 11, 1943

ENGINEERING

Electronic Method Used To Regulate Motor Speed

➤ AN IMPROVED electronic control for direct-current motors was described to the American Institute of Electrical Engineers, meeting in Salt Lake City, by K. P. Puchlowski of the Westinghouse Electric and Manufacturing Company, East Pittsburgh.

The device is a "package unit," complete in itself, operated on ordinary alternating current from a remote pushbutton station. All rotating parts are eliminated except in the motor.

The control automatically speeds up the motor, slows it down, or puts it in reverse. Full driving force, or torque, is achieved even at low speeds.

Science News Letter, September 11, 1943

E FIELDS

MEDICINE

Polish Medical Center Prepared to Go to Poland

➤ THE POLISH Medical Center in Scotland is prepared to move its staff and equipment to Poland the minute peace is declared. In this manner Poland may once again become the health frontier for post-war Europe.

The double objective of the center is relief to suffering Poles who can be reached today and constant training for Poles in Scotland for the immense relief job to begin the day Poland is free.

Scots, Poles and Americans are cooperating to make the Paderewski Polish Hospital and Polish Medical School of Edinburgh University possible. A number of graduates of the medical school are already interning in the hospital.

The idea of the center was originated by Dr. Anthony Jurasz, formerly professor of surgery and dean of the medical faculty at the University of Poznan. Polish specialists in various branches of medicine and surgery have been attracted to the center. The 200-bed hospital has such specialized equipment as a pathological laboratory and X-ray tuberculosis research ambulance.

The Paderewski Testimonial Fund, Inc., of which Mrs. Vernon Kellogg of New York City and California is chairman, is arousing interest in this center in the United States.

Science News Letter, September 11, 1943

ASTRONOMY

Red Stars Found Imbedded In Titanium Oxide Gas

➤ A LARGE number of red stars, of the peculiar M type, are imbedded in atmosphere of titanium oxide gas, reports Dr. Oliver J. Lee, director of Dearborn Observatory of Northwestern University, who has studied the heavens during the past 12 years with the assistance of Ralph B. Baldwin, David W. Hamlin, and Richard F. Kinnaird. Approximately 85% of these red stars listed in Volume V of the *Annals of Dearborn Observatory* are relatively faint and have not previously been analyzed.

The M type stars are peculiar in that they are more numerous proportionally in the direction of the constellations Scorpio and Sagittarius, the center of our galactic system. This is in marked contrast, reports Dr. Lee, to stars of the R and N type which are surrounded by an envelop of gaseous carbon, for they cluster notably in the opposite part of the sky in the direction of the constellation Orion.

"In view of the oft-repeated statement that a large proportion of advanced M stars are variable, it was reasonable to expect that a considerable number of new long-period variables would be found," Dr. Lee relates. "We did not find half a dozen, although it would have been easy to detect a change of one or two magnitudes in brightness."

The study which Dr. Lee and his assistants have been making is hoped to throw light on the problem of how stars are born and what becomes of them when their internal energies have exhausted themselves. Observations of faint red stars will continue at Dearborn Observatory, and Dr. Lee hopes eventually to complete a spectrographic survey of the whole sky, classifying all faint red stars up to a magnitude of 11.5.

Science News Letter, September 11, 1943

METALLURGY

Corundum, Produced in U. S. First Time Since Last War

➤ CORUNDUM, a natural alumina abrasive used in manufacturing grinding wheels for tools and lenses, is now being mined again in the United States for the first time since the last war, the War Production Board states. The mining operations are carried on in South Carolina.

American needs for this important abrasive material have been met in the past years by importation from South Africa. A large plant for the treatment of boulder corundum is located at Pietersburg in Northern Transvaal. Corundum is reported to be widely distributed in the State of Musore, India. Little use of the Indian supply is reported.

Corundum, after mining, is crushed and sized. The coarse-grain products are sold to manufacturers of grinding wheels and the fine products to optical lens grinders. The fine dust after use by optical instrument workers is sold to retail opticians.

In 1940 the United States imported nearly 6,000 tons of corundum. The South Carolina mineral closely approximates the African product.

Science News Letter, September 11, 1943

EDUCATION

New Teaching Trend Opposed by Chemical Group

➤ "WAR is action, then let us train for action by continuing laboratory work in the high school curriculum," the American Chemical Society's committee on high school chemistry urges in a statement opposing what is called a nationwide trend to shift chemistry teaching from the laboratory to the class room.

"This trend is definitely unscientific, and is detrimental to the training necessary for modern military, civilian, and industrial needs.

"Do not let the teacher do the experiments; he is not going to do the fighting. Put the chemicals and apparatus in the hands of the student; he is the one who will have to coordinate his hands, his eyes, and his mind at the battle front," the committee urges.

Withdrawal of many routine technicians from industry makes it increasingly important that the high schools provide opportunity and stimulus for turning out more chemists.

The committee is carrying out a nationwide program to adjust high school chemistry studies to demands of the armed forces and recommends increasing the number of class hours for fundamental science.

"Exclusion of fundamental chemistry is a misconception of the military wishes for pre-induction training," the committee warns.

Science News Letter, September 11, 1943

CHEMISTRY

Tinplating Speeded by Use of New Chemicals

➤ TINPLATING sheet metal for the manufacture of tin cans for food preservation and other purposes is now carried out by the use of new and improved chemicals, and electroplating processes which save much tin and speed production. The new chemicals make possible a continuous process for electrotinning steel strips for containers.

By the use of the new high-speed continuous plating process, developed by the du Pont Company, 20,000-pound coils of steel sheet, 36 inches wide, are now being tin-coated at a rate of over 800 feet a minute. The process assures a uniform coating requiring from 40% to 65% less tin than is required in the older hot-dip method.

Science News Letter, September 11, 1943

CHEMISTRY

New Dirt Chasers

Research is yielding new soap formulas and cleansers which will be available after the war. Now they are used to help clean up the Axis.

By GLENN SONNEDECKER

➤ SEARCH for better soap extenders and cleansers is putting unfamiliar ingredients in wartime dirt chasers for the home and turning up radically new soaps for the armed forces, plus a promise of post-war relief to those plagued by hard water and tough cleaning jobs.

Some day the housewife may read a soap label like this one the soldier sees as he unwraps a bar of one of the newest Army products:

"This soap is the result of extensive research by the Quartermaster Corps, and is designed to meet as many of your requirements as possible. It can be used for 1, toilet uses; 2, laundering of clothes; 3, cleansing mess kits and similar equipment; 4, shaving. It will do all these things in soft, hard, or sea water at any reasonable temperature."

How can a soap do these things? The answer is in synthetic detergents: new cleaning agents that are complex organic chemicals, such as fatty alcohol sulfates.

Even before Pearl Harbor Army scientists foresaw the time when war might bring a shortage of materials for ordinary hard water soaps. As war clouds gathered they foresaw the time when Americans might be hanging out the wash in all parts of the world—perhaps using water icy cold as it comes from a mountain stream, or salty as dipped from the ocean.

The Navy's Bureau of Ships was at work on the problem too—as early as 1938. Experts from industry also undertook to see just what could be done with these dirt chasing chemicals.

Getting a bar that would look and act like soap was one of the last stumbling blocks. First one binding agent or diluent was tried, then another. The bars absorbed moisture from the air, crumbled, became incrusted and abrasive.

Then a scientist asked, "Why not use ordinary soap? It's a binder that has all the properties we want."

It worked; and the armed forces all over the world are now using a similar half-breed formula which calls for roughly a third or more of the total content to be a regular soda soap and at least a fourth to be a synthetic detergent.

Thirty-two million pounds of these bars have been bought or contracted for by the Navy alone in a little more than a year. Results of using the better synthetic compounds in salt water are said to measure up to conventional soaps used in soft water. Development work is still in progress.

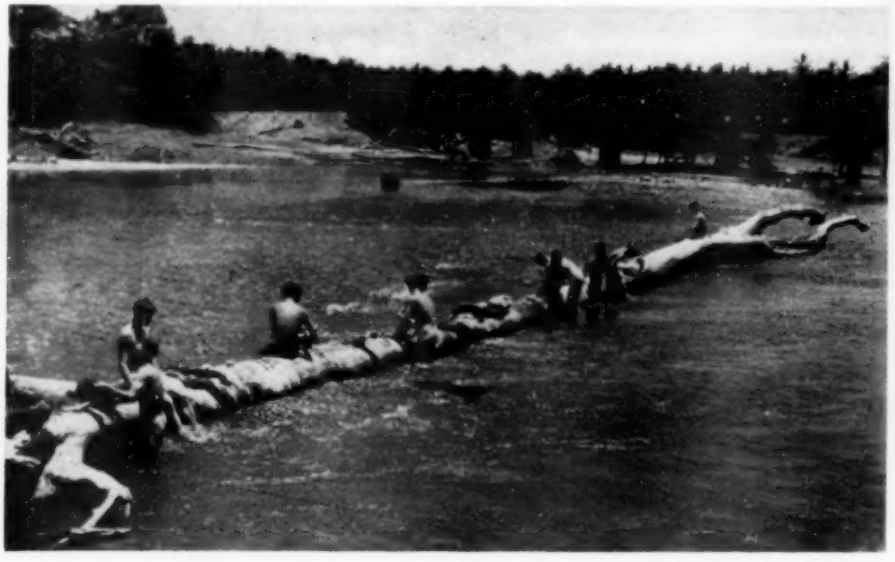
Large quantities of fresh water, precious mid-ocean cargo, are being saved aboard ship by one of the formulas developed at the Naval Engineering Experiment Station at Annapolis. The clothes are washed in sea water, rinsed a couple of times in sea water, then soused in fresh water for the final rinse.

The first family of these synthetic soaps immigrated to this country from Europe about 1930. They were called the gardinols, known in chemical circles as fatty alcohol sulfates. They are born from the marriage of the hydrocarbon chain from the alcohol—12 to 16 carbon atoms long—to the main part of sulphuric acid.

During the past decade other types have been developed, often fancier molecules but usually distant cousins of the gardinols. As some of the basic chemicals for their synthesis have gone on the critical list, changes continue to occur in their manufacture and manner of use.

Any hope that householders will get the synthetic dirt chasers soon is dimmed by Dr. Conrad J. Sunde of the War Production Board's conservation division, who says:

"With requirements of the armed



IN ACTION—New soap formulas are in action on jobs like these with the armed forces throughout the world. Soldiers, sailors and marines are shown, in this official Navy photograph, washing out the grime of Guadalcanal jungles.

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Window on New Worlds

UNTIL recently there were a lot of very small things that scientists knew existed, but that even the best microscopes couldn't show—things even smaller than the light waves that would make them visible.

That was a fundamental limitation. It was like trying to use a yardstick with no feet or inches marked on it. You could measure big things, like a house. But when you tried to use it to measure small things, like a pin, you'd be stumped.

Then it was discovered that electrons—tiny particles of electricity—behave like light waves, although they are much shorter than the light waves we see by. Magnets and electric fields act on these electrons very much as a lens acts on light. So *electron* microscopes were developed. And, sure enough, they opened up to view a whole world that had previously been invisible!

It's too early yet to predict all that this new world contains. But what it promises! Just imagine what it would mean to doctors to see—not just in vague outline, but with details of structure—the mysterious somethings that cause influenza, infantile paralysis, and the common cold! Or for chemists to study the complex molecules of synthetic plastics, or the crystals that give alloys their unusual properties. From here on—it's anybody's guess!

Like every other tool of science, right now the electron microscope is being aimed at things that will help win the war. But when we say that the world after the war is going to be better, it's because the electron microscope and the other new tools developed in the research laboratories of American industry will help to make it so. *General Electric Company, Schenectady, N. Y.*

★ ★ ★

Hear the General Electric radio programs: The "Hour of Charm" Sunday 10 p.m. EWT, NBC—"The World Today" news, every weekday 6:45 p.m. EWT, CBS.

The G-E electron microscope discloses two of the six cutting tools with which a mosquito pierces the skin. The length of the inner barbs is about eight millionths of an inch.

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IN SEA WATER—Aboard ship sailors find the new cleanser works in cold sea water. This is an official Navy photograph.

forces for synthetic detergents increasing, and a limited production capacity available, it would seem that any considerable civilian use of these products does not appear possible in the near future."

Will these versatile detergents revolutionize cleaning chores in most post-war homes? It's not likely. But for special use by those who must struggle with hard water, those who now must employ expensive water softening methods, and for cleaning jobs where good hot water isn't at hand—the new formulas show great promise. They also have many industrial uses, such as for cleaning metals.

Meanwhile, housewives are wondering whether regular soap supplies will be sufficient for the duration. The soap question tossed back and forth between Washington officials has been, "To ration or not to ration?"

The supply situation has been wobbly but increased supplies of fats for soap, more imports, and greater use of extenders may give householders nearly their normal needs without rationing—if hoarding is stopped. Officials claim that the local shortages that have been cropping up here and there can usually be traced to bankrupting runs on the grocer's soap shelves or heavy war demands.

Consumption of soap in the United States has been variously estimated at from 22 to 27 pounds per person annually. Production last year was around 3,800,000,000 pounds.

Only a year or so ago there was little thought of a soap shortage. True, coconut, palm and other soap oils had been cut off from the Far East, but there were plenty of other fats and oils on the market—fats which form soap when boiled with a strong alkali.

Then early this year, as war needs rose, the government clamped down on putting edible fats and oils into the soap kettle. Manufacturers were limited to 85%, later 80%, of total fats used in 1940-41. Scarce coconut oil, which formerly made up at least a fourth of the fat used in many soaps, dropped to 5% and lower.

Since the middle of June quantities of coconut, palm and soybean oils have been released by the government to stave off the growing soap shortage and further allotments are reported tagged for such use. Increased slaughtering has made more lard and tallow available recently.

To pad out their production, soap makers have been using more and more extenders and fillers; so far keeping one step ahead of government officials who have been thinking about enforcing use of a definite percentage of substitute products.

You haven't noticed the change in soaps? It's mainly because the better extenders have little effect on soap quality or appearance. Rosins, tall oil, and silicates, such as waterglass, are being experimented with and are the ones most likely to turn up in the soap you buy in the future.

Rosin is obtained indirectly from pine trees through turpentine distillation. Soap could be made from it 100%—but you wouldn't like it. Recent research shows, however, that up to about 15%, the paler grades of rosin do the job well and cause little darkening of soap color, which has been one of the chief objections.

Use of rosin in soap has totaled about 100,000,000 pounds annually, chiefly going into brown laundry bars, but one authority believes the demand may now rise to 250,000,000 pounds. Ample supplies are available to meet the need.

Tall oil, another extender, has some of the properties of rosin and comes from the same source—pine trees—but by a different route. At paper pulp mills where the wood is digested by alkalis, the fatty acids and rosin acids are separated from skimmings as tall oil by acid treatment. Then the oil is refined by distillation.

The eight pulp mills now recovering tall oil, plus several others that could be brought into production, could probably handle all the skimmings available by acting as regional converters for the duration.

Science News Letter, September 11, 1943

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WILDLIFE

NATURE RAMBLINGS

by Frank Thone

Meeting the Mammals

➤ OUR HABITUAL haste often interferes with the formation of interesting friendships. We rush about our respective immediate businesses, seeing most other people as mere flashes or blurs, if we see them at all. Only when something beyond our control, like an accident or an illness, imposes the necessity for at least a momentary pause do we begin to learn what worthwhile folk there are among our hitherto neglected neighbors. We rediscover what our forebears knew, in days when the world moved at a more pedestrian pace and people had time to be neighborly.

Something of the same kind is true of our relations with our quieter neighbors, too, the four-footed folk in fur or hair that we know collectively as the wild mammals. Most of us never get to see them, except possibly a few scared fugitives jumping for their very lives, because for a generation we Americans have spent most of our outdoor time rushing along the road at what used to be called express-train speed. Now that war shortages have stopped most motor travel, and slowed the rest down to no more than a reasonable gallop, we have a more or less enforced opportunity to learn that the world has other inhabitants than our own high-speed selves, and even to cultivate their acquaintance if we so desire.

This approach-on-foot is recommended by Victor H. Cahalane, in the introduction to his new book, *Meeting the Mammals* (Macmillan, $1.75). Mr. Cahalane, who is in charge of the section on National Park wildlife of the federal Fish and Wildlife Service, has had many years of experience as a kind of official host or liaison officer, in getting visitors to our national parks acquainted with the animals.

Go on foot, he advises, preferably early in the morning or late in the afternoon. If you are unable to hike and must drive, drive very slowly—away under the recommended 35-mile limit. But unless you are infirm and unable to leave the car, get out and walk quietly for at least short distances in likely-looking woodlands and meadows, pausing often and standing or sitting perfectly still, using your eyes and ears but not your tongue. Let the mammals do the talking; you'll be surprised how communicative some of them are. Carry a good pair of binoculars if possible.

Don't expect or attempt to get close enough to indulge the apparently universal human impulse to pat heads or scratch ears. Most of our fellow-mammals are not as gregarious as our species; they do not like back-slapping.

Too great familiarity often is even dangerous, Mr. Cahalane warns. The so-called hold-up bears in the national parks, he says, are really nothing but beggar bears. They have come to expect

Binoculars ON FIGHTING DUTY . . .

"She doesn't answer . . .
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If the ship fails to answer the shell fired across her bow, huge guns in the harbor protection system will take more drastic action. Such decisions must be based on clear, sharp images unmistakable of the incoming ship. That's why these men use Bausch & Lomb Binoculars —the finest "eyes" provided to any of the world's fighting forces.

Because this is only one of thousands of situations where binoculars can best deliver the facts, the tremendously increased production of Bausch & Lomb Binoculars cannot fill all the needs. The Navy urges every owner of a 6x30 or 7x50 Bausch & Lomb Binocular to turn his glass over to the Naval Observatory, Washington, D. C., for active war duty. Ship it, carefully packed, with your name and address on a tag attached to the glass. Do it today—the Navy needs this fine precision instrument now.

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alms from every person who lets them approach, and when food is not forthcoming they try to find it in their natural way—which means with their claws. They are not vicious, but they are stupid, and the injuries they may inflict in their blundering greediness are no less painful than if they were intended.

Science News Letter, September 11, 1943

GENERAL SCIENCE

Science Books for Blind Developed by Westinghouse

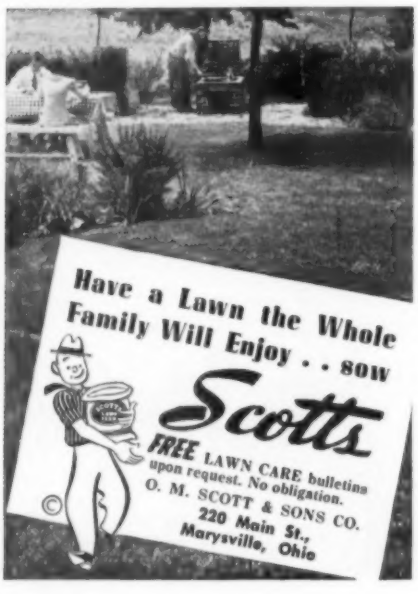
➤ SCIENCE BOOKS for the blind are being developed by the Westinghouse Electric and Manufacturing Company through cooperation of its research staff and school service department. An experimental Braille edition of the first booklet has been printed and distributed to 85 schools for the blind throughout the United States.

Children at the Western Pennsylvania School for the Blind, who acted as judges, were enthusiastic because it put science on the level of their everyday experience, B. S. Joice, superintendent of the school stated.

Braille editions of other booklets are now being considered for distribution. The project developed from the Little Science Series, a group of booklets on subjects ranging from microscopic life to the planets of our solar system, which have been already distributed in the ink-print edition to about 600,000 junior and senior high school students.

Science News Letter, September 11, 1943

Freight canoes 22 feet long are used in northern Canada's brush country.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MILITARY SCIENCE

Pattern for Invasion

Air Forces officer believes invasions should start only when pre-invasion strategic bombing has acted to reduce the cost in casualties to a minimum.

➤ PRECISION bombing will set the pattern for invasions and reduce United Nations casualties in the final stages of the war, Brig. Gen. E. P. Sorensen, assistant chief of the Army Air Forces Staff Intelligence, declares. (*Mechanical Engineering,* August)

Larger ground forces and very high casualties would be the price of neglecting strategic bombing, he states in support of a scientific program of selecting industrial targets.

"Invasion should start when to delay longer would waste effort, but when its cost has been reduced to a minimum," Gen. Sorensen suggests, outlining four phases of pre-invasion bombing.

The first shallow penetrations are primarily aimed at reducing air-defense power of the enemy, hitting aircraft factories and flying fields along with other targets on the schedule. Little or no effect from such attacks is seen in the front lines.

When the enemy is no longer able to increase his defenses and when a steadily growing bomber force can withstand the losses of deeper penetration, the second phase is entered. After this period the internal decay of the enemy will be well under way, but production is normally so far ahead of war use, Gen. Sorensen points out, that only isolated evidences of shortages will be noticeable.

Even during this period there would be little lowering of the ground-force requirements and losses in case of invasion.

Getting down to knocking out the heart of enemy production capacity is the third phase—daily headlines telling of a chemical plant shattered, a synthetic-oil plant in flames.

Gen. Sorensen likens the Air-Force's pin-pointing of enemy vitals to "a skillful surgeon removing a tumor from a vital organ. But in this case, the work is to create the cancer in the enemy vitals—to cause the internal decay—eventually leaving but a shell similar to a pie crust which crumbles away when pushed even gently."

Invasion started during this period would require much less force and experience much less loss, but if time permits it should not be attempted while there are prospects of further reducing the forces required and losses to be expected, Gen. Sorensen maintains.

The last phase of the bombing program starts when the initial destruction of selected vitals has been completed and the cleaning-up process has started, with special attention to production units that may have been rebuilt from the ruins.

"We hope and fully expect," declares Gen. Sorensen, "to prevent most of the enormous losses which would be suffered on our side without this bombing, a saving beside which the most severe air losses will be infinitesimal."

Science News Letter, September 11, 1943

● RADIO

Saturday, Sept. 18, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Miss Margaret Patterson, secretary of the Science Clubs of America, will discuss the plans of Science Clubs for developing scientific talent and ability among science students.

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Science News Letter, September 11, 1943

⚙ *SAFETY RAZORS may soon shave effectively in facial crevices and cavities. A new triangular-bladed device just patented reaches beard in inaccessible places, it is claimed, and does a better job on open places because it cuts diagonally.*

Science News Letter, September 11, 1943

⚙ *FISH LURES of the future may consist of imitation minnow-sized rubber fishes with water and concealed fish-hooks inside. A poor fish grabs and swallows the patented rubber minnow, squeezes it inside himself and gets hooked.*

Science News Letter, September 11, 1943

⚙ *SEWING TWO or more fabrics together without thread is possible by use of a strip of thermoplastic material along the seam. A nichrome wire replaces the needle of an ordinary sewing machine and a silver contact replaces the shuttle. They are connected by electric current, which makes contact when the needle descends. The fabrics are spot-welded where pierced by the heated wire. A patent for the process has been applied for.*

Science News Letter, September 11, 1943

⚙ *SIMPLE TRAINING gunsights give student pilots the feel of real aerial fighting without leaving the ground. The sight consists of a 15-inch cylinder containing a light source, a photographic film of target rings, two inexpensive*

lenses and an unsilvered mirror through which the pilot looks. The picture shows one of the sights trained on the moving image of a plane in the background. The new sight duplicates performance of a combat sight at a tenth the cost.

Science News Letter, September 11, 1943

⚙ *SOUNDS WITHIN the human body are coupled more closely to the ears of the physician by an improved acoustic stethoscope. Much more sensitive in its range of hearing than an ordinary stethoscope, the new instrument is claimed to introduce significant sounds formerly heard weakly if at all. By turning a knob the physician can adjust the hearing range at will.*

Science News Letter, September 11, 1943

⚙ *WHITE CONCRETE floors are coming into wider use in war plants. Where much factory work has to be done on underside surfaces, such as on airplanes, some 60 per cent. more light is reflected than from gray cement floors, thus speeding up production and reducing accidents to workmen.*

Science News Letter, September 11, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 173.*

The milk of the *camel*, unlike that of most mammals, is rich in vitamin C.

MATHEMATICS DICTIONARY

Invaluable in reading any book that uses mathematics.

THE JAMES MATHEMATICS DICTIONARY, the only such book now published, provides standard definitions of the terms and phrases from arithmetic through elementary differential equations, the technical terms ordinarily used in the applications of these subjects, and more advanced basic terms. Easy examples, many illustrations and all sorts of formulas are included. The appendix contains tables of weights and measures, a list of mathematical symbols and the tables ordinarily used in handbooks.

This dictionary is a great deal more than a collection of definitions. It explains, illustrates and correlates, stressing especially those operations that are hardest to understand. One reader has called it "Ten texts in one."

Available in flexible or non-flexible binding, for $3.00, from the Digest Press, Dept. 3-B, Van Nuys, California, or Science News Letter.

WILDLIFE

Ammunition Now Available For Control of Predators

➤ PREDATORY animals that carry off poultry and young farm animals, and game birds that destroy crops when they become too numerous, face increasing danger this fall because the War Production Board has just allotted to farmers and ranchers a double portion of shotgun and rifle ammunition. It is a double-barreled war measure: crop and farm animal saving is important, and important also is the fact that much of the meat of predatory animals and game birds is edible if properly handled.

Recreation shooters will not benefit by the new allotment. Sportsmen hunters will have as much ammunition as they had last year, provided the farmers and ranchers leave enough for them after their needs are met.

Sport hunting is a desirable activity because it adds much food to the meat supply. Federal officials estimate that in 1942 hunters killed over 140,000,000 game and fowl units, providing approximately 250,000,000 pounds of edible meat if the kills were correctly dressed.

Science News Letter, September 11, 1943

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First Glances at New Books

➤ ALES HRDLICKA, veteran physical anthropologist, spent several prewar summers in Alaska, in pursuit of the elusive pattern of ancient migrations from Asia. Unexpectedly, these scholarly data have become dramatic background for the news coverage of the latest attempted migration from that continent, which has just ended in frustration and flight. All of which makes unusually interesting reading of ALASKA DIARY, in which the late Dr. Hrdlicka has set down his day-by-day experiences, enlivened by many photographic illustrations. (*Jaques Cattell*, $5.)

Science News Letter, September 11, 1943

➤ VITAMINS we are all too apt to regard, in our self-centered human way, as something that we and the other animals require, with hardly a thank-you to the plants that synthesize most of them, or a passing question of their possible utility to the plants themselves. However, in PLANTS AND VITAMINS, a noted Swiss botanist, W. H. Schopfer, not only makes good the lack but presents the plant-physiological data so completely and definitively that this book automatically becomes the reference point in its field. The translation has been done with high competence by Norbert L. Nocker. (*Chronica Botanica*, $4.75)

Science News Letter, September 11, 1943

➤ FREQUENTLY one hears the assertion that "Jews just naturally aren't fighters." This is exposed as a libel in JEWS IN AMERICAN WARS, by J. George Fredman and Louis A. Falk. Warrior sons of Israel have fought with distinction in every American war from 1776 to now; in World War I the armed forces received 5.73% of their strength from a people who constituted only 3.27% of the total population and of the Jewish boys in the Army, more than a third were in the Infantry and less than a tenth in the Q.M.C.! (*Jewish War Veterans of the U.S.*, $1.25.)

Science News Letter, September 11, 1943

➤ THE OCEAN is receiving more attention nowadays as a possible source of food and other necessary supplies; and in the ocean the most important organisms are the diatoms, for they are the beginning of the nutritional chain that eventuates in herring and tuna, seals and whales. A solid contribution to scientific knowledge of these "grasses of the sea" is Easter E. Cupp's MARINE PLANKTON DIATOMS OF THE WEST COAST OF NORTH AMERICA, a bulletin of the Scripps Institution of Oceanography (*Univ. of California Press*, $2.50).

Science News Letter, September 11, 1943

➤ THOUGHTFUL MEN are already giving much consideration to problems of the post-war world, and especially to questions of what we shall eat and wherewith we shall be clothed. Useful in such discussions will be WORLD TRADE IN AGRICULTURAL PRODUCTS, by Henry C. Taylor and Anne Dewees Taylor. It takes up in orderly fashion a number of the more important foodstuffs and fibers, and applies clear and scholarly thinking to their economics and geography. Especially valuable are the numerous compact tables, presenting data down to the beginning of the present war. (*Macmillan*, $3.50)

Science News Letter, September 11, 1943

➤ A MOSAIC PICTURE, or perhaps better, a montage, is THIS IS YOUR AMERICA, assembled out of the feature and editorial sections of hundreds of newspapers, giving glimpses of all phases of American contemporary life and history and filling three good-sized volumes. A fair proportion of the material is on scientific and technological subjects; one article is by a Science Service staff writer. Compilation is by Gurdon Simmons and Ralph Louis Meyer. (*Literary Classics, Inc.*, $3 a vol.)

Science News Letter, September 11, 1943

➤ AIRCRAFT NAVIGATION is a book for those interested in this subject who have had no previous instruction. It covers both theory and practice. In its preparation four English authorities on aviation and education collaborated; H. Stewart, A. Nichols, S. A. Walling and J. C. Hill. (*Macmillan*, $2.)

Science News Letter, September 11, 1943

• Just Off the Press •

THE AMERICAN PATENT SYSTEM—William B. Bennett—*Louisiana State Univ.*, 259 p., illus., $3. A factual study giving consideration to economic effects.

BEEKEEPING FOR PROFIT AND PLEASURE—Addison Webb—*Macmillan*, 116 p., illus., $2.

COMPLEXITY OF MENTAL PROCESSES IN SCIENCE TESTING — Frederick Thomas Howard—*Columbia Univ.*, 54 p., $1.75.

CRAB APPLES FOR AMERICA—Donald Wyman—*Amer. Assn. of Botanical Gardens and Arboretums*, 81 p., illus., $1.

FEEDING BABIES AND THEIR FAMILIES—Helen Monsch and Marguerite K. Harper *Wiley*, 386 p., illus., $3.50.

FLUID MECHANICS—R. C. Binder—*Prentice-Hall*, 307 p., illus., $5.

HYPERTENSION: A Manual for Patients With High Blood Pressure—Irvine H. Page—*Thomas*, 80 p., illus., $1.50.

INTRODUCTION TO PLANT PATHOLOGY—Frederick Deforest Heald—*McGraw-Hill*, 603 p., illus., $4. 2nd ed.

LINCOLN-DOUGLAS: The Weather as Destiny—William F. Petersen—*Thomas*, 211 p., illus., $3.

OPTICAL CRYSTALLOGRAPHY — Ernest E. Wahlstrom—*Wiley*, 206 p., illus., $3. A review of principles in the rapidly expanding field of crystallography.

OUR LIVING WORLD—Carroll Lane Fenton—*Doubleday, Doran*, 312 p., illus., $4.50.

PLYWOODS: Their Development, Manufacture and Application—Andrew Dick Wood and Thomas Gray Linn—*Chemical Pub.*, 373 p., illus., $4.

PROCEEDINGS OF THE AMERICAN PHILOSOPHICAL SOCIETY: Symposium on Post-War Problems—Wm. E. Lingelbach, ed—*American Philosophical Society*, Vol. 87, No. 2, 198 p., $1. Papers read on February 19-20, 1943.

STRATEGIC AND ESSENTIAL MINERALS OF THE PACIFIC NORTHWEST — Otis W. Freeman—*Northwest Scientific Assn.*, 74 p., illus., 35c.

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